mixed together (parallel activation) or at molar ratios of B to A of 2.2 to 1.5 when A is activated then B is added (sequential activation).

3. Raising or lowering the reaction temperature to narrow or broaden the Mw/Mn, respectively.
4. Changing residence time to affect product properties. Large changes can have significant impact. One to five, preferably four hours residence time appears to produce good product properties.
5. Spraying the catalyst into the reactor in such a way as to create a particle lean zone. A particle lean zone can be created by a 50,000 lb/hr flow of cycle gas through 6 inch pipe. The catalyst can be atomized w/a spray nozzel using nitrogen atomizing gas.
6. The activator, preferably MMAO 3A can be used at 7 weight % al in isopentane, hexane or heptane at feed rate sufficient to give an Al/Zr ratio of 100 to 300.
7. Catalyst A is mixed on-line with MMAO 3A then Catalyst B is added on line, then the mixture is introduced into the reactor.
8. Catalyst A is mixed on-line with MMAO 3A and Catalyst B is mixed on line with MMAO 3A thereafter the two activated catalysts are mixed on-line then introduced into the reactor.

All documents described herein are incorporated by reference herein, including any priority documents and/or testing procedures. As is apparent form the foregoing general description and the specific embodiments, while forms of the invention have been illustrated and described, various modifications can be made without departing from the spirit and scope of the invention. It is within the scope of this invention to use two or more Group 15 containing metal compounds with one or more bulky ligand metallocene-type catalyst system and/or one or more conventional type catalyst system. Accordingly it is not intended that the invention be limited thereby.

What is claimed is:

1. A process for polymerizing olefin(s) comprising a catalyst composition having a first catalyst system comprising a Group 15 containing bidentate or tridentate ligated Group 3 to 7 metal compound wherein the Group 3 to 7 metal atom is bound to at least one leaving group and to at least two Group 15 atoms, and wherein at least one of the at least two Group 15 atoms is bound to a Group 15 or 16 atom through a bridging group; and a second catalyst system.

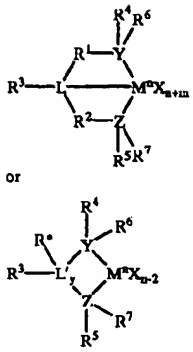
2. The process of claim 1 wherein the second catalyst system comprises a bulky ligand metallocene compound, a conventional transition metal catalyst selected from the group consisting of Ziegler-Natta catalysts, vanadium containing catalysts, and Phillips catalysts, or combinations thereof.

3. The process of claim 1 wherein the metal in the Group 15 containing metal compound is a Group 4 to 6 metal.

4. The process of claim 1 wherein the bridging group is selected from the group consisting of a $C_1$ to $C_{20}$ hydrocarbon group, a heteroatom containing group, silicon, germanium, tin, lead, and phosphorus.

5. The process of claim 1 wherein the Group 15 or 16 atom may also be bound to nothing, a hydrogen, a Group 14 atom containing group, a halogen, or a heteroatom containing group, and wherein each of the two Group 15 atoms are also bound to a cyclic group and may optionally be bound to hydrogen, a halogen, a heteroatom, a hydrocarbyl group, or a heteroatom containing group.

6. The process of claim 1 wherein the Group 15 containing metal compound is represented by the formula:



wherein

M is a Group 3 to 14 metal,

each X is independently a leaving group

y is 0 or 1,

n is the oxidation state of M,

m is the formal charge of Y, Z and L or of Y, Z and L',

L is a Group 15 or 16 element,

L' is a Group 15 or 16 element or Group 14 containing group,

Y is a Group 15 element,

Z is a Group 15 element,

$R^1$ and $R^2$ are independently a $C_1$ to $C_{20}$ hydrocarbon group, a heteroatom containing group having up to twenty carbon atoms, silicon, germanium, tin, lead, or phosphorus,

$R^3$ is absent, a hydrocarbon group, hydrogen, a halogen, or a heteroatom containing group,

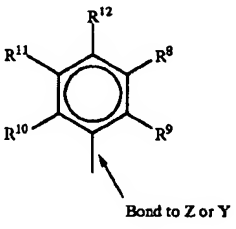
$R^4$ and $R^5$ are independently an alkyl group, an aryl group, a substituted aryl group, a cyclic alkyl group, a substituted cyclic alkyl group, a cyclic aralkyl group, a substituted cyclic aralkyl group or a multiple ring system,

$R^1$ and $R^2$ may be interconnected to each other, and/or $R^4$ and $R^5$ may be interconnected to each other,

$R^6$ and $R^7$ are independently absent, hydrogen, an alkyl group, halogen, heteroatom or a hydrocarbyl group, and

$R^*$ is absent, hydrogen, a Group 14 atom containing group, a halogen, or a heteroatom containing group.

7. The process of claim 6 wherein $R^4$ and $R^5$ are represented by the formula




wherein $R^8$ to $R^{12}$ are each independently hydrogen, a $C_1$ to $C_{40}$ alkyl group, a halide, a heteroatom, or a heteroatom containing group containing up to 40 carbon atoms, wherein any two R groups may form a cyclic group and/or a heterocyclic group, and wherein the cyclic groups may be aromatic.

8. The process of claim 7 wherein $R^9$, $R^{10}$ and $R^{12}$ are independently a methyl, ethyl, propyl or butyl group.

9. The process of claim 8 wherein $R^9$, $R^{10}$ and $R^{12}$ are methyl groups, and $R^8$ and $R^{11}$ are hydrogen.

10. The process of claim 9 wherein M is a Group 4 metal, L, Y, and Z are nitrogen, $R^1$ and $R^2$ are a hydrocarbon radical, $R^3$ is hydrogen, and $R^6$ and $R^7$ are absent.

11. The process of claim 9 wherein M is a Group 4 metal, L and Z are nitrogen, L' is a hydrocarbyl radical, and $R^6$ and $R^7$ are absent.

12. The process of claim 2 wherein the second catalyst system comprises a bulky ligand metallocene compound of the general formula $L^DMQ_2(YZ)X_n$

wherein M is a Group 3 to 16 metal,

$L^D$ is a bulky ligand that is bonded to M,

Q is a univalent anionic ligand bonded to M,

$Q_2(YZ)$ forms a unicharged polydentate ligand,

X is a univalent anionic group or a divalent anionic group, and

n is 1 or 2.

13. The process of claim 12 wherein X is a carbamate, carboxylate, or other heteroallyl moiety described by the unicharged polydentate ligand $Q_2(YZ)$.

14. The process of claim 12 wherein M is a Group 4 to 6 metal.

15. The process of claim 12 wherein M is a Group 4 metal and $L^D$ is an indenyl group or a fluorenyl group.

16. The process of claim 1 wherein the second catalyst system comprises a conventional transition metal catalyst selected from the group consisting of Ziegler-Natta catalysts, vanadium containing catalysts, Phillips catalysts and combinations thereof.

17. The process of claim 1 wherein the catalyst systems comprise an activator.

18. The process of claim 1 wherein the polymerization process is a continuous gas or slurry phase process.

19. The process of claim 1 wherein the olefin(s) are ethylene and one or more other olefin(s).

20. The process of claim 2 wherein the Group 15 containing bidentate or tridentate ligated Group 3 to 7 metal compound and the bulky ligand metallocene compound are present in a molar ratio of 1:99 to 99:1.

21. The process of claim 2 wherein the Group 15 containing bidentate or tridentate ligated Group 3 to 7 metal compound and the bulky ligand metallocene compound are present in a molar ratio of 20:80 to 80:20.

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